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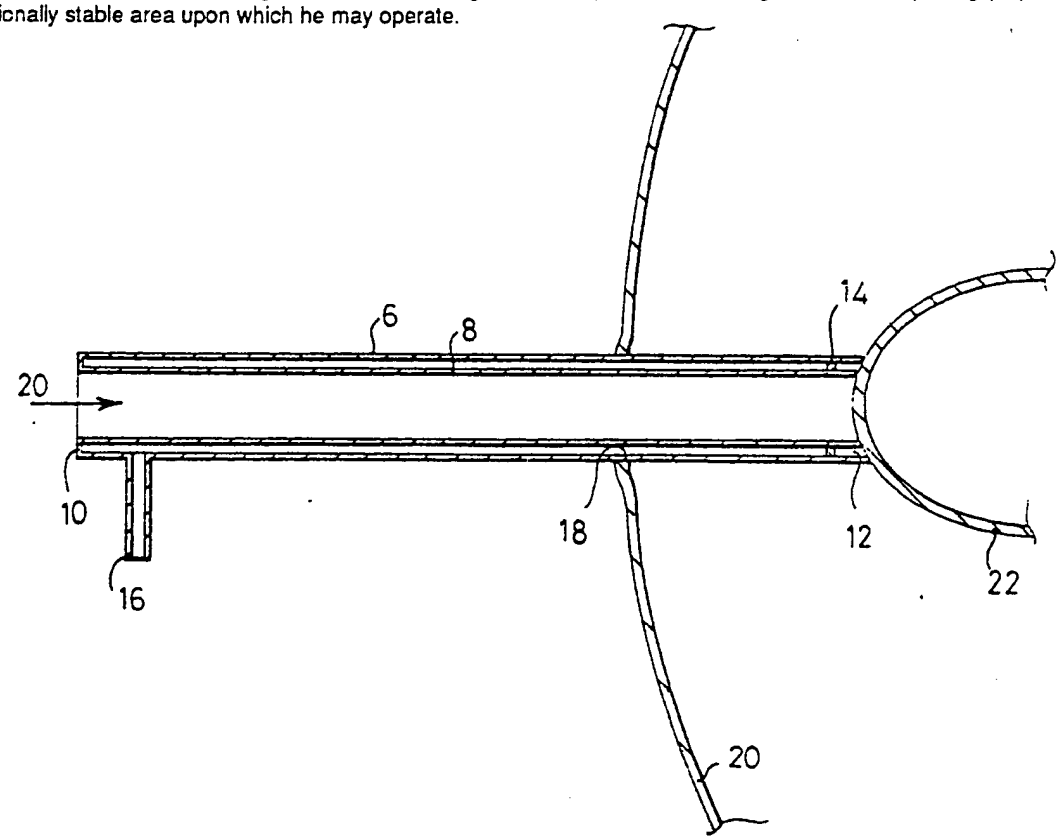
(54) Surgical device

(57) A surgical device comprises two hollow elongate tubular elements (6, 8) sealed at one end by an annular wall (10) but being open at the opposite, forward end to provide an annular space (12). At the rearward end a pipe (16) extends through the member (8) enabling air to be withdrawn from the space between the members (6 and 8).

In the use of the device, the device may be inserted into the body cavity into contact with an organ such as the gall bladder (22), and air withdrawn from the space between the two annular members (6 and 8), causing the device to be firmly clamped by suction against the gall bladder. The surgeon is thus presented, through the central opening (20), with a positionally stable area upon which he may operate.



The claims were filed later than the filing date within the period prescribed by Rule 25(1) of the Patents Rules 1982.

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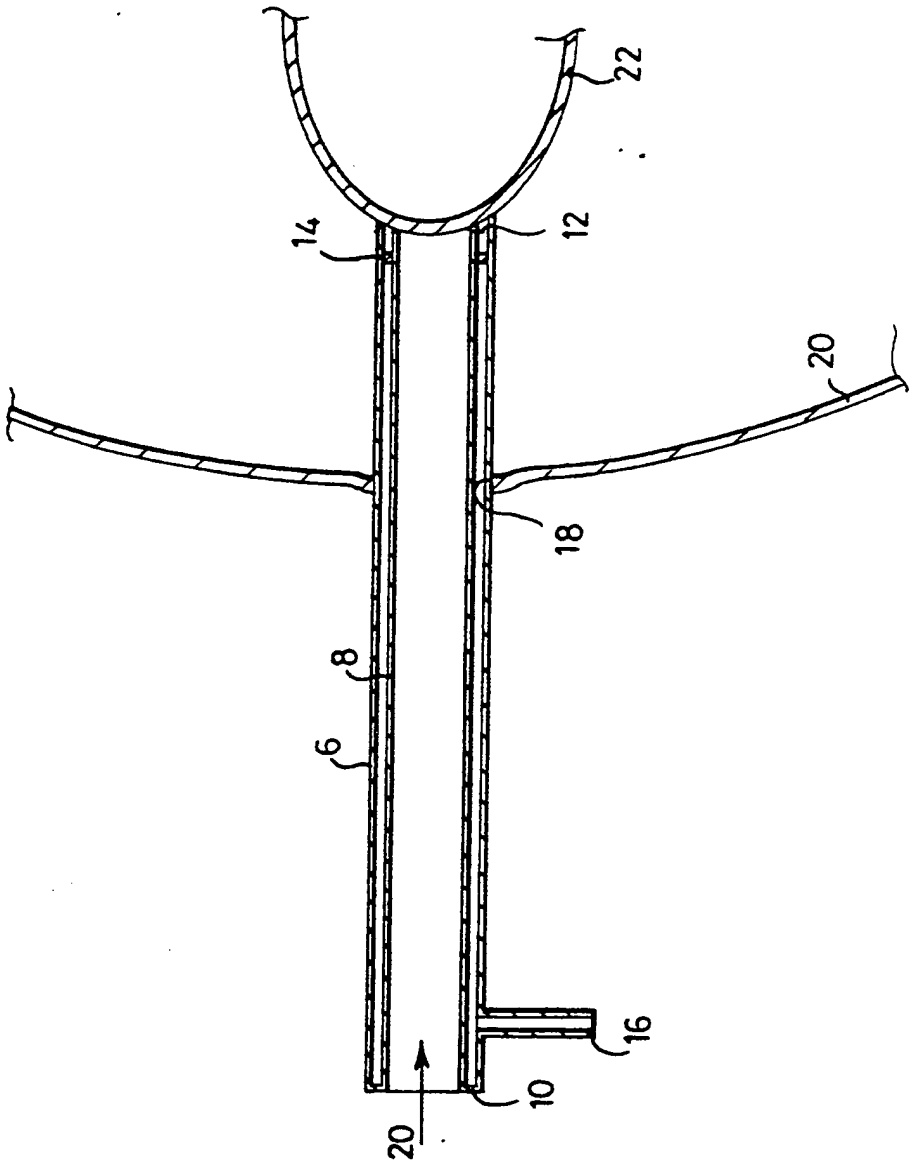

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Title: "Surgical Device"

Description of Invention

This invention is concerned with improvements relating to surgical devices, particularly for carrying out operations on internal organs of the human body. The present invention had been devised particularly for performing an operation on the gall bladder, but it is of course to be appreciated that the invention has application to surgery in general.

According to this invention there is provided a surgical device which defines an annular space from which air may be withdrawn enabling the device to be clamped by suction against an organ of the body, enabling surgery to be carried out on the organ through the area bounded by said annular space.

In this manner by clamping the device to an organ, the organ may be positionally secured relative to the device whilst surgery is being carried out on the organ with essentially the interior of the organ being isolated from the interior of the body cavity.

Conveniently the device is hollow and elongate, providing a central passageway which is in part bounded by said annular space which passageway provides access to the organ for surgery to be carried out on the organ.

Preferably the device comprises two hollow members mounted one within the other, each of which is open at one end to define said annular space, the area between the hollow members at the opposite end being closed. In this manner air may be removed from between the members such as by a suction pump. Advantageously the hollow members are circular in cross-section, but may have other, and indeed different cross-sectional areas.

Advantageously the hollow members terminate at differing axial positions such that the end faces of the tubular members lie on a spherical surface. In this manner, in use, the organ upon which surgery is being performed may be drawn partially into the device.

Thus conveniently the hollow members are tubular, and advantageously are elongate, allowing the device to be inserted through an incision in the

body wall and air to be withdrawn from the device by the application of an exterior section line. Instruments, such as a light source, scapels, fluid suction devices, syringes and the like may be introduced into the organ being operated upon through the hollow centre of the device, as is necessary.

Advantageously the device is associated with a housing or external clamping mechanism through which the device extends, conveniently slidably, the housing comprising control mechanism for accurate positional adjustment of the device, and thereafter to retain the device in a set position, freeing the surgeons hands. The housing may also locate control mechanism by which mechanical surgical instruments, such as probes, may be manipulated.

According to this invention there is also provided a device exclusively for use in performing an operation on the gall bladder, the device defining an annular space from which air may be withdrawn enabling the device to be clamped by suction against the gall bladder, and presenting an area within the annular space the following operating steps may be carried out:

(a) the gall bladder may be incised and the interior fluid may be sucked out;

(b) the gall bladder may be washed with a caustic liquid to destroy the lining of the gall bladder;

(c) the neck of the gall bladder may be plugged.

Subsequent to carrying out step (c), the gall bladder will wither away, without the necessity for surgical removal.

Conveniently step (c) is performed by a plastic plug, and a suitable adhesive such as that generically known as "super glue".

There will now be given a detailed description, to be read with reference to the accompanying drawings, of a surgical device which is a preferred embodiment of this invention, and a surgical operating procedure involving the use of the device, both the device and the operating procedure being illustrative of this invention in certain of its aspects.

The accompanying drawing is a schematic sectional view showing the preferred device in use in performing an operation on a gall bladder.

The surgical device which is the preferred embodiment of this invention have been designed specifically for use in the performance of an operation on the human gall bladder, and comprises two hollow elongate tubular members 6, 8 sealed at one end by an annular wall 10 but being open at the opposite, forward end to provide an annular space 12. A perforated ring 14 is provided

within the tubular member 6 and surrounding the tubular member 8 to support the tubular member 8 within the tubular member 6 with a desired degree of concentricity.

At the rearward end a pipe 16 extends through the member 8, enabling air to be drawn from the space between the members 6 and 8.

In the use of the device which is the preferred embodiment of this invention is performing an operation on the human gall bladder, and incision 18 is made into the abdomen wall 20 allowing the device to be inserted into the body cavity into contact with the gall bladder 22. For this purpose an optical probe may be introduced through the central opening 20 of the device, the probe conveniently comprising a light source and an eye piece, enabling the surgeon actively to postion the forward end of the device against the wall of the gall bladder.

The pipe 16 may then be connected to a suction device, withdrawing air from the space between the two tubular member 6 and 8, and causing the device to be firmly clamped by suction against the gall bladder.

The surgeon is thus presented, through the central opening 20, with a positionally stable area upon which he may operate.

In performing the sequential steps, the surgeon will initially puncture the gall bladder, and drain bile fluid therefrom. The surgeon may then wash the gall bladder, such as to remove internal stones, which will flow outwardly through the central opening 20, conveniently to a further source of suction.

It is of course to be appreciated that whilst the device which is the preferred embodiment of this invention has been devised specifically for use in performing an operation on the gall bladder, it may be used to advantage where similar or analogous problems arise.

The surgeon may then plug the neck of the gall bladder by the use of a plug, conveniently of a plastics material, which may be secured in place within the neck of the gall bladder by the use of a suitable adhesive, such as super glue.

If necessary, larger stones in the gall bladder may first be fragmented, such as by the use of a laser beam introduced through the central opening 20. The gall bladder may then be washed with a caustic solution, such as caustic phenol, which will destroy the lining of the gall bladder, causing the gall bladder in due course to wither without the need for surgical removal.

A drain may be attached to the interior of the gall bladder through the central opening 20, which drain will protrude through the incision 18 when the vacuum on the pipe 16 has been removed, and the device withdrawn from the incision.

The features disclosed in the foregoing description, or the accompanying drawings, expressed in their specific forms or in terms of a means for performing the disclosed function, or a method or process for attaining the disclosed result, or a class or group of substances or compositions, as appropriate, may, separately or in any combination of such features, be utilised for realising the invention in diverse forms thereof.

CLAIMS:-

1. A surgical device which defines an annular space from which air may be withdrawn enabling the device to be clamped by suction against an organ of the body, enabling surgery to be carried out on the organ through the area bounded by said annular space.

2. A surgical device according to Claim 1 wherein the device is hollow and elongate, providing a central passageway which is in part bounded by said annular space, which passageway provides access to the organ for surgery to be carried out on the organ.

3. A surgical device according to one of Claims 1 and 2 comprising two hollow members mounted one within the other, each of which is open at one end to define said annular space, the area between the hollow members at the opposite end being closed.

4. A surgical device according to Claim 3 wherein said hollow members are circular in cross-section.

5. A device according to one of Claims 3 and 4 wherein said hollow members terminate at differing axial positions such that the end faces of the members lie on a spherical surface.

6. In combination, a surgical device according to any one of the preceding claims and a housing or external clamping mechanism through which the device extends.

7. A combination according to Claim 6 wherein the device is slidable in the housing, the housing comprising control mechanism for accurate positional adjustment of the device.

8. A combination according to one of Claims 6 and 7 wherein the housing locates control mechanism by which mechanical surgical instruments may be manipulated.

9. A devic exclusively for use in performing an operation on the gall bladder, the device defining an annular space from which air may be withdrawn enabling the device to be clamped by suction against the gall bladder, and presenting an area within the annular space on which the following operating steps may be carried out:

(a) the gall bladder may be incised and the interior fluid may be sucked out;

(b) the gall bladder may be washed with a caustic liquid to destroy the lining of the gall bladder;

(c) the neck of the gall bladder may be plugged.

10. A device according to Claim 9, wherein the step (c) is performed by the use of a plastic plug, and a suitable adhesive.

11. A surgical device constructed and arranged substantially as hereinbefore described with reference to the accompanying drawings.

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